LEED During Construction

Current Requirements Review (Army)

- All vertical new construction/major renovation & repair – LEED Silver (min 33 points)
- Includes tenant organizations? YES
- Horizontal construction – exempt from Silver but not from LEED
- Buildings not climate controlled – exempt from Silver but not from LEED (human comfort)
- Minor renovation & repair - exempt from Silver but not from LEED
- Mandatory waste diversion 50%
- EPAct mandatory energy reduction 30%
- Certifiable - “Able to achieve USGBC certification if submitted”
- AFH & RCI: still SPIRIT “Gold”
- Required on all design & construction teams through closeout: LEED AP
- FY09 & beyond: register project w/USGBC & use Letter Templates
- Tonto’s horse?

LEED Vocabulary Review

- Certified Level, Certified, Certifiable
- USGBC Certification versus USGBC Registration
- Government Validation versus USGBC Certification
- LEED Accredited Professional (LEED AP)

Submittals

ALL PROJECTS HAVE:

- Design phase documentation (final design)
- Preconstruction phase documentation
- Documentation accumulated during construction
  - Quarterly SWAR waste management report
- Large closeout submittal

LEED Documentation Requirements and Submittals Checklist

- Point by point what and when required (for both design and construction)
- Follows USGBC with exceptions noted (USGBC interest versus USACE interest)
- Included in ALL PROJECTS
  - DBB look in 01 33 29 LEED DOCUMENTATION
  - DB look in 01 33 16 DESIGN AFTER AWARD
- Excel spreadsheet located at http://en.sas.usace.army.mil, “Engineering Criteria”

LEED Interpretation Resources

- LEED-NC Reference Guide Version 2.2

(This is the essential complete reference for LEED – Every Office Needs One! Order from usgbc.org, members price)

- Errata Sheet for LEED-NC Reference Guide Version 2.2 (usgbc.org) – 10/31/07 is most recent.
- Credit Interpretation Rulings (members area of usgbc.org) posted questions and answers from project teams – sorted by credit.
- LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects (AGMBC) – free download at usgbc.org – scoring for campus, multiple building projects
- Contact info for your SDD POC

Design Phase Submittals

- For many credits ALL documentation is provided by Final Design
- Be aware of the credit requirements and watch for adverse construction phase modifications

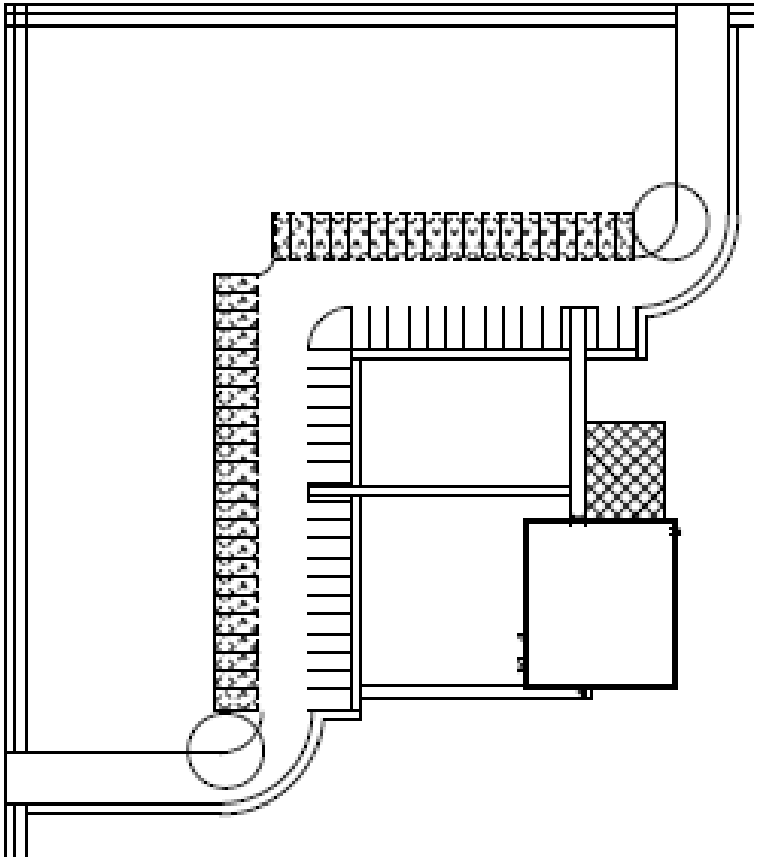
SS1		Site Selection	Final Design		Statement confirming that project does
			Final Design	X	LEED Site plan drawing that shows all boundary of all bodies of water and/or and a line depicting 5' elevation above boundary. Not required if neither cond
SS2		Development Density & Community Connectivity	Final Design		Option 1: LEED Site vicinity plan show Show density boundary or note drawir
			Final Design		Option 1: Table indicating, for project radius (keyed to site vicinity plan), site density calculation. Density radius cal within density radius.
			Final Design		Option 2: LEED Site vicinity plan show pedestrian walkways and the locations Services surrounding the project site.
			Final Design		Option 2: List (including business nan within the 1/2 mile radius, keyed to site

(LEED Documentation & Submittals Checklist)

SS Credit 7.1: Heat Island Effect: Non-Roof

Add trees, add concrete plaza and substitute open grid pavement :

- 2EA 35’dia trees (400sf shade ea)
  - $1200 add
- 7700sf open grid pavement
  - $14,000 add
- 2800sf plaza
  - $10,000 add
- Reflective/shaded required (50%): 18,655sf
- Concrete walks & plaza: 10,470sf
- Open grid pavement: 7700sf
- Vegetative shading: 800sf



Contractor wants to substitute smaller dia trees (better establishment). Is this OK?

Preconstruction Submittals

- Erosion, Sedimentation & Pollution Control Plan (part of Environmental Mgt Plan)
- Air Pollution Control Plan (part of Environmental Mgt Plan)
- Waste Management Plan (part of Environmental Mgt Plan)
- IAQ Management Plan (if pursuing this point)
- Materials Implementation Plans (if by Contractor)

Preconstruction Submittal: Construction Activity Pollution Protection Prerequisite

- Erosion, Sedimentation and Pollution Control Plan is part of Environmental Mgt Plan
- Air Pollution Control Plan is part of Environmental Mgt Plan
- Look in ENVIRONMENTAL PROTECTION spec (same as NPDES)

e. An Erosion, Sedimentation, and Pollution Control Plan (ESPCP) must be prepared and certified in accordance with the General NPDES Permit No. GAR100001. The plan will identify an appropriate and comprehensive system and design of Best Management Practices (BMPs) required to control erosion and sedimentation runoff from construction activities and sampling and monitoring requirements. The plan

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

In accordance with Georgia Water Quality Control Act (GWQCA) of 1964 and the Manual for Erosion and Sediment Control in Georgia (Latest Edition).

(UFGS ENVIRONMENTAL PROTECTION)

Preconstruction Submittal: Construction Waste Management Credit

- Waste Mgt Plan is part of Environmental Mgt Plan
- Look in ENVIRONMENTAL PROTECTION spec

1.2.3.11. A Solid Waste Management Plan identifying waste minimization, collection, and disposals methods, waste streams (type and quantity), and locations for solid waste diversion/disposal including clearing debris and C&D waste that is diverted (salvaged, reused, or recycled). The plan shall detail the contractor's actions to comply with, and to participate in, Federal, state, regional, local government, and installation sponsored recycling programs to reduce the volume of solid waste at the source. The Contractor shall identify any subcontractors responsible for the transportation, salvage and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the facility's ability to accept the solid waste shall be attached to this plan. A Construction and Demolition Waste Management Plan, similar to the plan specified in the UFGS 01 74 19 (formerly 01572) may be used as the non-hazardous solid waste management plan. The Contractor shall provide a Non-hazardous Solid Waste Diversion Report. The

(UFGS ENVIRONMENTAL PROTECTION)

Preconstruction Submittal: IAQ Management During Construction Credit

- IAQ Management Plan has 5 components:
  - HVAC Protection
  - Source Control
  - Pathway Interruption
  - Housekeeping
  - Scheduling
- Must comply with SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 1995, Chapter 3 (EVEN THOUGH UNOCCUPIED).

EQ3.2		Construction IAQ Management Plan: Before Occupancy	""Preconstruction		Construction IAQ Management Plan

(LEED Documentation & Submittals Checklist)

Preconstruction Submittals: Materials Credit Implementation Plans

- Materials implementation plans may be Designer or Contractor responsibility
  - If not done by Designer it is a Contractor Preconstruction submittal.

MR6		Rapidly Renewable Materials	Closeout		Statement indicating total materials value and whether default or actual.
			Closeout		Spreadsheet calculations indicating, for each rapidly renewable material, material name/description, manufacturer, cost, rapidly renewable content percent, rapidly renewable product value. Total rapidly renewable product value, rapidly renewable materials percentage.
			Final Design or NLT Preconstruction		**Implementation Strategy Plan consisting of spreadsheet indicated above, filled in with estimated quantities to show strategy for achieving goal.
			Closeout	X	Manufacturer published product data or certification confirming rapidly renewable material percentages in spreadsheet

(LEED Documentation & Submittals Checklist)

Preconstruction Submittals: Materials Credit Implementation Plans

- Always by Designer:
  - Rapidly Renewable Materials
  - Materials Reuse (incorporation of salvage)
- Always by Construction Contractor:
  - Regional Materials
- Can Go Either Way:
  - Recycled Content
  - Certified Wood

Materials Implementation Plans

- **Look in LEED Documentation spec. to see if designer or Contractor is responsible**

1.6.5 Materials and Resources Credit 7, Certified Wood

****

NOTE: Use the bracketed Contractor selection option if specific wood materials on the project have not been specified to be certified to meet the project goal. Using more than 50 percent of certified wood may contribute to the following LEED credit: ID1.

****

[Contractor shall select materials so that a minimum of [50][_____] percent (by dollar value) of permanently installed wood-based materials and products for the project are certified in accordance with FSC STD 01 001.]
[The following certified wood materials are specified so that a minimum of [50][_____] percent (by dollar value) of wood-based materials and products for the project are certified in accordance with FSC STD 01 001: [_____].]

(UFGS LEED DOCUMENTATION)

Submittals During Construction

- **MT, UFGS and LEED are all set up for a large closeout submittal (formal LEED submittals are not required during construction)**
- **Contractor is required to update LEED documentation monthly during construction & have it available on site for review at all times**
  - **YOU DETERMINE FREQUENCY OF GOVT REVIEW**
  - **WILL NOT COME TO YOUR OFFICE**
  - **Recommend review monthly (treat like as-builts)**

Submittals During Construction

- **Individual credits will have surges in data collection at different points in project**
  - **Waste diversion heavy during demolition**
  - **Low VOC paint, carpet, interior sealants, composite wood when these products are purchased for interior use/installation**
  - **Materials credits (recycled content, regional, certified wood) per Implementation Plans**
  - **Construction IAQ during construction at/following HVAC installation**
  - **BE AWARE OF WHAT CREDITS RECENT WORK RELATES TO AND REVIEW DOCUMENTATION FOR THOSE CREDITS**

Much harder to catch up on documenting old work than to keep up as yo

Submittals During Construction: SWAR Waste Management Reports

- SWAR is Army solid waste reporting system – need to furnish Contractor's quarterly and closeout waste diversion reports to your Installation SWAR coordinator when received
- Quarterly report requirement is in ENVIRONMENTAL PROTECTION spec and LEED Documentation & Submittals Checklist

Activities During Construction

- Periodic review of Contractors documentation
  - Being kept current monthly
  - Materials credits on track for required percentages
- Conformance to Implementation Plans
- Review proposed changes for effect on LEED credits
- Spot-check special materials requirements (paint & sealant VOC labels)
- Compare products seen in field to documentation spreadsheets on what is being used
- Compare FIO submittals to documentation

Activities During Construction: MT Construction Submittals

- **MT requires FIO Government submittal for all DOR Approval submittals AFTER DOR approval**
  - **Extensions of design**
  - **Critical materials**
  - **Deviations from solicitation, accepted proposal or completed design (includes changes to products named in accepted proposal)**
  - **Equipment whose compatibility with entire system must be checked**
- **MT requires government review of deviations prior to proceeding**
- **MT requires government concurrence on deviations to completed design before proceeding**

These are the submittals you will get during construction (look in spec SUBMITTAL PROCEDURES)

Closeout

Large LEED closeout submittal

- DB: complete documentation package design & construction
- DBB all construction phase documentation (design phase by others)

Closeout

- Pre-closeout & closeout meeting
- Installation Representative participates
- Formal endorsement of final score by all parties

1.8 LEED REVIEW MEETINGS

Pre-Closeout Meeting. Approximately 30 days before submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including installation representative) will meet to review the documentation, determine which, if any, credits will be audited and identify any corrections/missing items prior to the closeout LEED documentation submittal.

Approximately 14 days after submittal of LEED closeout documentation, the Contractor and the Government's project delivery team (including installation representative) will meet to review the LEED closeout documentation. The review conference will include discussion of and resolution of all review comments to ensure consensus on achievement of credits and satisfactory documentation. At the review conference a final score will be determined and endorsed in writing by all parties.

(UFGS CLOSEOUT SUBMITTALS)

Closeout (all projects): Registered Project Administration

- Registered project contains all design and construction phase LEED documentation
- Copy and retain completed set of LEED documentation in USACE project file
- Transfer administration to Installation if desired (needed if Installation decides to seek USGBC certification or register building for LEED-EB) or de-activate online project (call USGBC)

Multiple Contractor Combined Project

- ONLY when buildings and their site work are constructed by different contractors
  - Occurs at complexes that contain more than one standard design
  - Occurs when standard design task order is for building only and site work is under another contract
- Government must coordinate building and site points between contractors to achieve minimum score.

One Score with Multiple Contractors: LEED Strategy Tables

- One table for each building/building type in Combined Project:
  - Government strategy to achieve LEED Silver (building and site combined)
  - Status of site selection credits (brownfield, etc)
  - The minimum number of credits that building CTR, site CTR must earn
  - Contractor permissions to substitute credits for those indicated in Government's strategy
  - Division of responsibilities for shared credits and aggregate materials credits

Same table is used in both bldg and site work contrac

LEED Strategy Table

LEED Credit Paragraph	LEED 2.2 Strategy Table	Building CTR Substitution Permitted	Site CTR Substitution Permitted	Required Points Strategy	YELLOW ITEMS: GD please fill in indicating whether site will earn these credits and return to COS. GREEN ITEMS: GD please review and confirm feasibility/revise as needed and return to COS. BLUE ITEMS: GD please highlight any added building and shared points proposed.
BUILDING: BRIGADE/BATTALION HQ FACILITIES					
PAR	FEATURE				REMARKS
CATEGORY 1 – SUSTAINABLE SITES					
SSPR1	Construction Activity Pollution Prevention (PREREQUISITE)	NIC	NO	R	Site CTR is primary permittee. Building CTR is secondary permittee to primary permittee.
SS1	Site Selection	NIC	NO	1	Site CTR responsible.
SS2	Development Density & Community Connectivity	NIC	NO	N/A	Site CTR responsible.
SS3	Brownfield Redevelopment	NIC	NO	1	Site CTR responsible.
SS4.1	Alternative Transportation: Public Transportation Access	NIC	NO	N/A	Site CTR responsible.
SS4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	NO	NO	1	Combined Bldg/Site credit. Site CTR responsible for bicycle storage. Building CTR responsible for shower/changing rooms.
	Alternative Transportation: Low				

LEED Strategy Table

- Indicates division of responsibilities for materials credits
  - These % are a guess – monitor and adjust as needed during construction to achieve project total

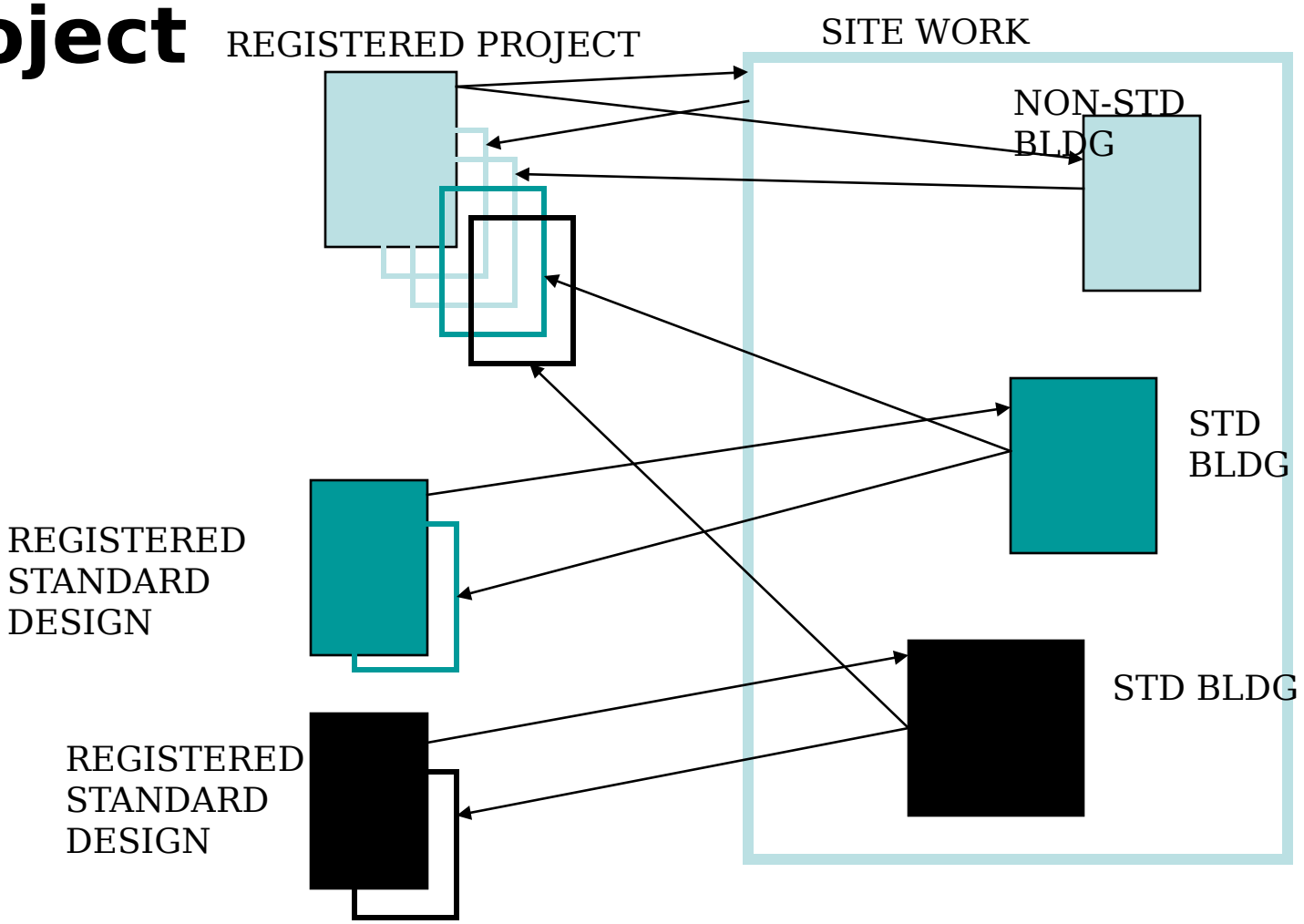
MR4.2	Recycled Content: 20% (post-consumer + 1/2 pre-consumer)	NO	NO		Combined Cumulative credit. Building CTR responsible for minimum 20% recycled materials. Site CTR responsible for minimum 1% recycled materials.
MR5.1	Regional Materials:10% Extracted, Processed & Manufactured Regionally	NO	NO	1	Combined Cumulative credit. Building CTR responsible for minimum 3% regional materials. Site CTR responsible for minimum 30% regional materials.
					Combined Cumulative credit. Building CTR responsible for minimum 8%

- No substitutions permitted on shared or combined cumulative credits (become mandatory)

Multiple Contractor Combined Project: LEED Registrations

- ALL Contractors are required to use LEED Letter Templates for consistent documentation format
- REGISTERED PROJECT is defined by scope of site work – site work and non-standard buildings get templates at Registered Project
- REGISTERED STANDARD DESIGNS are administered by COSs – standard design buildings get templates at Registered Standard Design
- All parties' completed templates compiled at Registered Project.

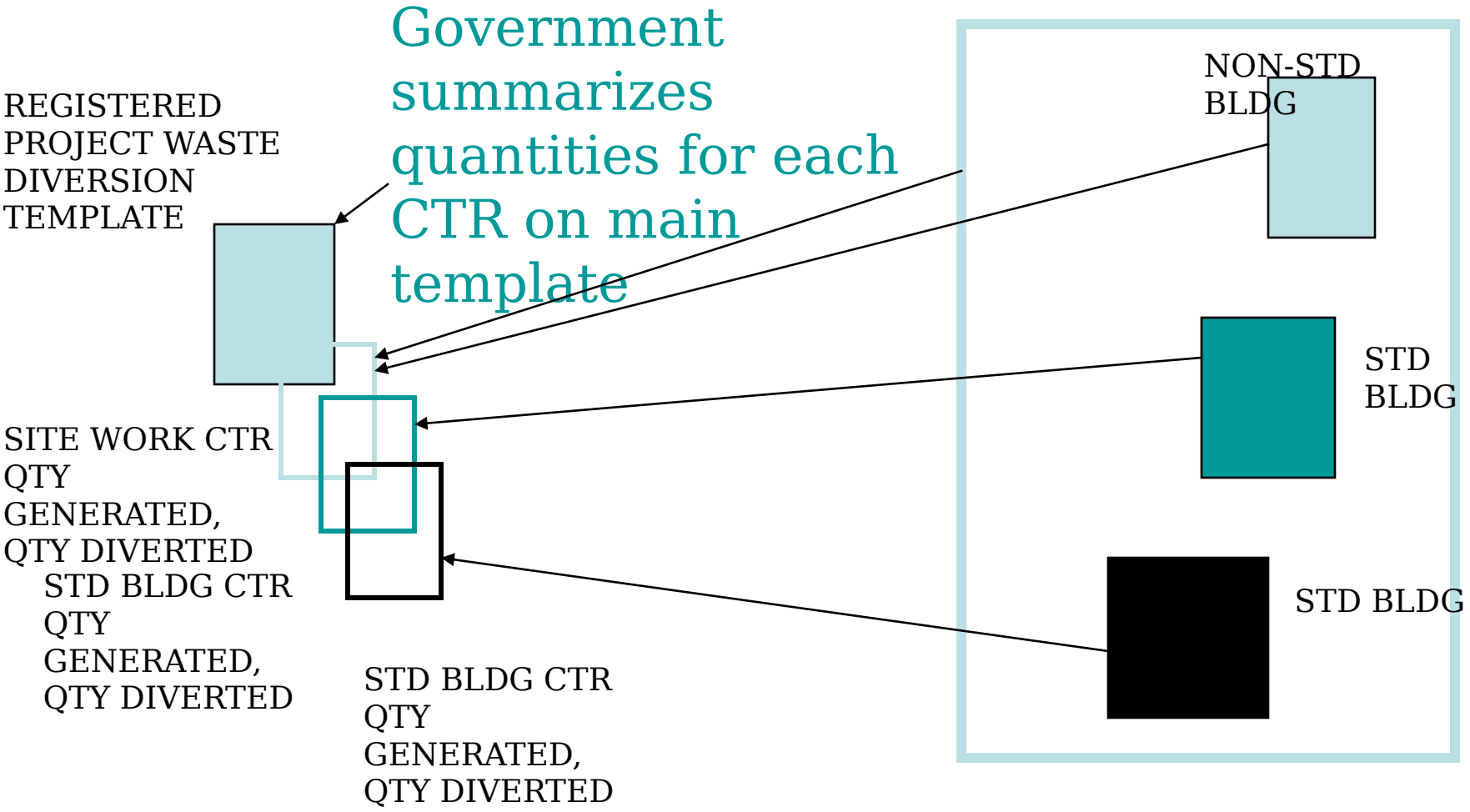
Multiple Contractor Combined Project



Multiple Contractor Combined Project: Combining Data

- Government combining data: Government must administer Registered Project during construction (contractor may administer during design)
- Site Contractor combining data: must be a contract requirement (this option added to MT JAN 09 – Appendix N explains)
  - Shared Building/Site Credits: attach each contractor's partial data to blank original
  - Aggregate Materials Credits: create summary including each contractor's data at blank original and attach each contractor's data to summary original

Combining Data – Waste Diversion


Government summarizes quantities for each CTR on main template
REGISTERED PROJECT WASTE DIVERSION TEMPLATE
SITE WORK CTR QTY GENERATED, QTY DIVERTED
STD BLDG CTR QTY GENERATED, QTY DIVERTED
STD BLDG CTR QTY GENERATED, QTY DIVERTED
NON-STD BLDG
STD BLDG
STD BLDG

This requirement applies to 3 to 4 Materials credits

LEED Construction Credits

LEED credits that receive heavy emphasis during construction phase

Practical Examples from a QA

- Incorporate LEED® into all preparatory meetings
- Incorporate LEED® into all weekly safety briefings
- Consider LEED® like Safety – look for it every time you're in the field

Documentation

MR Credit 4 / MR Credit 5

FT LEWIS FY05 Whole Barracks Renewal

Materials Table

					MR Credit 4					MR Credit 5		
Description of Material		Vendor	Back Up Provided	Material Cost (Less Labor & Equipment)	Recycled Content			Local/Regional Materials				
					Post-Consumer	Post-Industrial	Value	Location	Distance	Credit 5.1 Manufacture	Location	
				[$]	[%]	[%]	[$]			[$]		
02	SITEWORK											
03	CONCRETE						$0					
03200	Rebar	Addison Construction - Nucor and Casecad	Yes	$165,366	71%	27%	$139,734	McMinnville	167	$165,366		
04	MASONRY						$0					
05	METALS						$0					
05120	Structural Steel	Allied Steel	Yes	1,235,300.00	80%	7%	$1,031,476					
05500	Miscellaneous - Stainless Stee	Kadee Industries	Yes	12,806.00		90%	$5,763	NA			NA	
05210	Steel Joists	Scafco - USS Posco	Yes	278,400.00		68%	$94,656	NA			NA	
06	WOODS & PLASTICS						$0					
06415	Custom Casework	Westmark - Roseberg Forest Products	Yes	$430,095		100%	$215,048					
07	THERMAL / MOISTURE PROTECTION						$0					
07210	Building Insulation	SCS - Owens Corning	Yes	$167,015	9%	26%	$36,743					
07322	Concrete Tile Roofing	Monier Lifetile	Yes	$174,889		4%	$3,498	Lakewood, WA	8	$174,889	within 500	
07413	Metal Siding	AEP Span	Yes	$374,469	25%	0%	$93,617	Tacoma, WA	15	$374,469	NA	
08	DOORS & WINDOWS						$0					
08110	Steel Doors and Frames	American Direct	Yes	$154,461	23%	7%	$40,932	NA			NA	
08120	Aluminum Doors and Frames	Traco	Yes	$28,145	0%	25%	$3,518	NA			NA	
08210	Wood Doors	American Direct	Yes	$47,222	0%	60%	$14,167	NA			NA	
08520	Aluminum Windows	Traco	Yes	$228,063	0%	15%	$17,106	NA			NA	
08625	Aluminum Framed Skylights	Dea Mor	Yes	$103,608	0%	24%	$12,433	Vancouver, WA	120	$103,608	NA	
08800	Glazing	Dea Mor	Yes	$103,608	0%	20%	$10,361	Seattle, WA	45	$103,608	NA	
09	FINISHES						$0					
09510	Accoustical Ceilings	Armstrong	Yes	$63,000	0%	82%	$25,830					
09650	Resilient Flooring	Johnsonite	Yes				$0					
09990	Paints	Sherwin Williams	Yes	$53,980	NA	NA	$0	Tumwater, WA	20	$53,980		
09990	Paints	Sound Coatings	Yes		NA	NA	$0	Centralia, WA	40	$0		
10	SPECIALTIES						$0					
10990	Miscellaneous - Rollout Mat	Kadee Industries	Yes	$12,046		50%	$3,012	NA		$0	NA	
				TOTAL			$1,747,893			$375,920		

Total Materials Cost		$9,148,875
Percentage of Recycled Content	(MR Credit 4.1 and 4.2) - NEED 15%	19%
Local/Regional Materials Percentage	(MR Credit 5.1) - NEED 40%	11%

17.00 x 11.00 in

SSPR1: Construction Activity Pollution Prevention Prerequisite

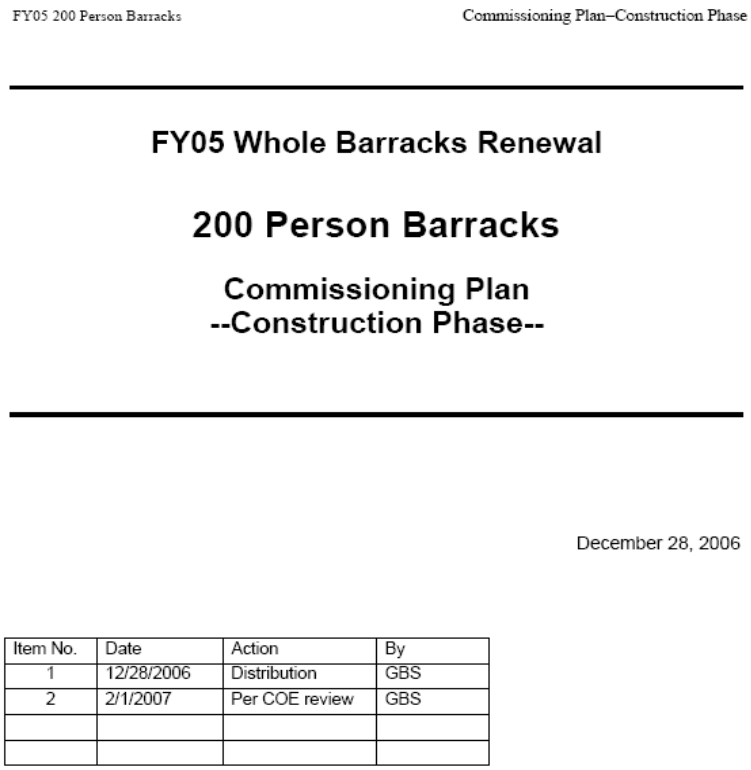
Intent:

Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation

Requirement:

Create and follow an Erosion and Sedimentation Control Plan that meets NPDES, regardless of site size

Fundamental Commissioning Prerequisite



FY05 200 Person Barracks — Commissioning Plan–Construction Phase

FY05 Whole Barracks Renewal

200 Person Barracks

Commissioning Plan
--Construction Phase--

December 28, 2006

Item No.	Date	Action	By
1	12/28/2006	Distribution	GBS
2	2/1/2007	Per COE review	GBS

- **LEED requires (as a minimum) commissioning of HVAC & controls PLUS lighting controls PLUS domestic water heating**
- **CxA varies by project – MT by Contractor, DBB by in-house staff or consultant**
- **CxA can change during course of project, may be employee of/hired by designer or construction contractor**
- **Commissioning Plan updated during construction**
- **Commissioning Report**

MR Credits 2.1 & 2.2: Construction Waste Mgt

Requirement:

Credit MR2.1 – Recycle or divert at least **50%** of non-hazardous construction and demolition debris **(MANDATORY ARMY PROJECTS)**.

Credit MR2.2 – Same as 2.1 but take BOTH points if **75%**.

Notes:

- LEED allows calculation by weight or volume, Army needs it in weight for it's reporting requirement (in MT wizard).
- Army (SWAR) and Air Force need quarterly and final reports with tickets (in MT wizard). Obtain from contractor, forward to installation coordinator.
- Waste mgt plan requirements are in MT Environmental Protection Plan spec.
- CANNOT include excavated soil and land-clearing debris (vegetation, rocks).
- MUST be generated on-site (no source reduction).
- CAN include charities, salvagers, recyclers, deconstruction, reuse on-site (rubble, asphalt).
- Renovations that don't qualify for MR1 can count reused materials in this credit (not both credits).
- Exclude hazardous materials from calculation.

Construction Waste Management Credit

- Commingled and/or separate materials collection receptacles
- Better use if conveniently located, marked
- Subcontractors need to know recycling is required
- Check receptacles occasionally for appropriate materials

MR Credits 4.1 & 4.2: Recycled Content

Requirement:

Credit MR4.1 – Use materials with recycled content so that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10%, based on cost, of the total value of materials on the project.

Credit MR4.2 – Same as 3.1 but take BOTH points if 20%.

Notes:

This is for incorporating new materials with recycled content.

Related to but IN ADDITION TO EPA CPG recycled content mandate requirements (individually specified).

See LEED Reference Guide for composite/partial calculations.

Building materials heavy contribution to total (concrete, steel, metals)

Multiple Contractor projects: division of percentage

Recycled Content

TOUGHROCK®

Georgia-Pacific Gypsum

Georgia-Pacific Gypsum Sustainable Materials Data Sheet

(See MSDS for additional information)

SECTION 1 Product and Company Identification

Product Name: ToughRock® Gypsum Board. Performance based qualities of this product based upon material composition are obtained by referencing ASTM C 36 and ASTM C 1396.

Product Use: Paper face and back non-combustible gypsum core for interior walls and ceiling applications.

Manufactured by:

Georgia-Pacific Gypsum LLC
133 Peachtree Street
Atlanta, GA 30303
(800) 225-6119 (Technical Information)
(404) 652-5119 (MSDS Request)

Georgia-Pacific Canada, Inc.
Allanburg Road
Thorold, Ontario L2V 3ZB, Canada
(800) 225-6119 (Technical Information)
(404) 652-5119 (MSDS Request)

SECTION 2 Recycled Content *(Percentages are by Weight and Vary by Location) (*LEED Recycled Content Credit 4.1)*

Manufacturing Location	Total Recycled Content	Pre Consumer Recycled Content	Post Consumer Recycled Content
Acme, TX	6%	4%	2%
Antioch, CA	6%	4%	2%
Blue Rapids, KS	6%	4%	2%
Brunswick, GA	6%	4%	2%
Caledonia, ON, Canada	8%	6%	2%
Camden, NJ	6%	4%	2%
Edmonton, AB, Canada	10%	8%	2%
Ft. Dodge, IA	6%	4%	2%
Las Vegas, NV	7%	5%	2%
Lovell, WY	6%	4%	2%
Long Beach, CA	6%	4%	2%
Newington, NH	6%	4%	2%
Savannah, GA	6%	4%	2%
Sigurd, UT	6%	4%	2%
Surrey, BC	21%	19%	2%
Sweetwater, TX	6%	4%	2%
Wheatfield, IN	96%	94%	2%
Tacoma, WA	42%	40%	2%

Plants are being added on an on-going basis. Please call the technical information line to determine if a closer plant has been brought on-line.

MR Credits 5.1 & 5.2: Regional Materials

Intent:

Increase demand for building products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

Requirement:

Credit MR5.1 – Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the projects site for a minimum of 10%, based on cost, of the total value of materials on the project.

Credit MR5.2 – Same as 3.1 but take BOTH points if 20%.

Notes:

ALWAYS contractor responsibility (01 33 29).

See LEED Reference Guide for composite/partial calculations.

Site materials heavy contribution to total - Multiple Contractor projects: division of percentage between contractors in LEED Strategy Table, must combine data from all contractors to determine project total (GD

MR Credit 6: Rapidly Renewable Materials

Intent:

Reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.

Requirement:

Use rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year cycle or shorter) so that the sum of these materials constitutes at least 2.5%, based on cost, of the total value of materials on the project.

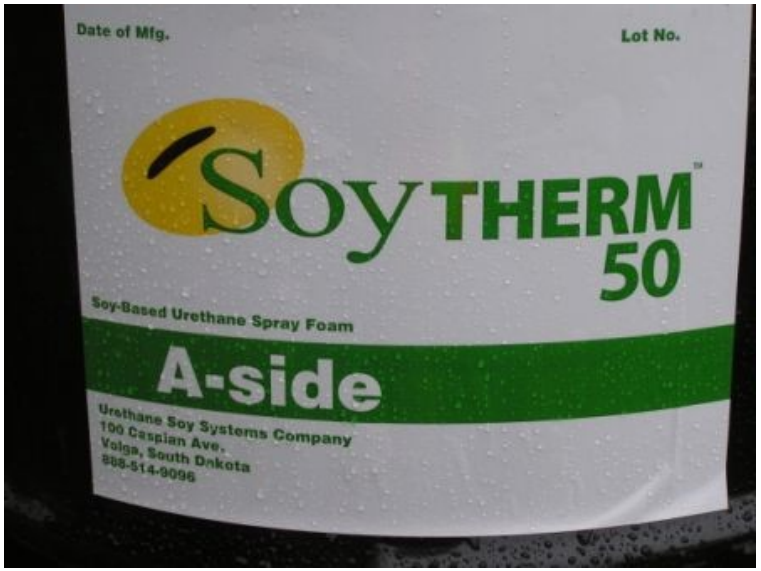
Notes:

ALWAYS Designer responsibility –materials are specified, implementation strategy attached to LEED DOCUMENTATION spec.

Examples: bamboo, linoleum, cork, wheatboard, strawboard, cotton or soy insulation.

Difficult on large new construction.

Rapidly Renewable Materials Credit

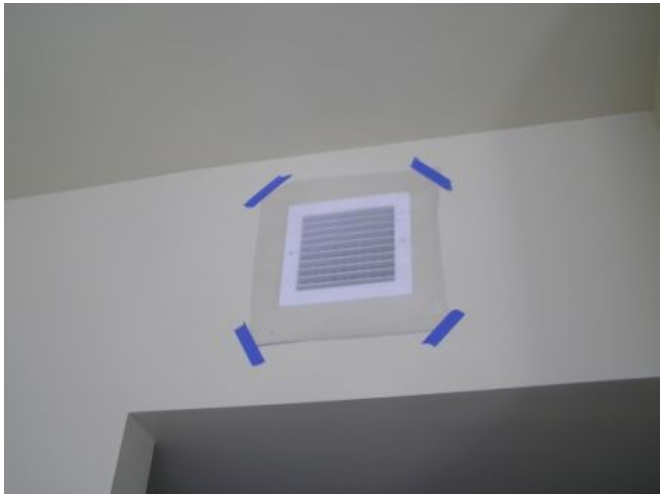


- May see new and unfamiliar materials
- Familiarize yourself with manufacturer requirements

Construction IAQ Management During Construction

Credit

- Meet or exceed SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 1995, Ch 3 EVEN THOUGH UNOCCUPIED.
- Conformance to IAQ Management Plan
- Proper storage of absorptive materials
- Protection of ductwork
- Filter replacement prior to occupancy



NOTE: This credit requires jobsite photos for

EQ Credit 3.2: Construction IAQ Mgt Before Occupanc

Requirement:

Option 1 – Flush-out

- **After construction ends and all interior finishes are installed and prior to occupancy, perform building flush-out by supplying total air volume of 14,000cf outdoor air per sf floor area, maintaining minimum 60 degrees temperature and maximum 60% relative humidity.**

  OR

- **Optional flush-out sequence for occupancy during flush-out.**

OR

Option 2 – Air Quality Testing

Conduct baseline IAQ testing after construction ends and all interior finishes are installed and prior to occupancy, using protocols and meeting concentration limits in LEED Reference Guide. Flush-out and re-test if tests fail.

Notes:

Include in construction schedule

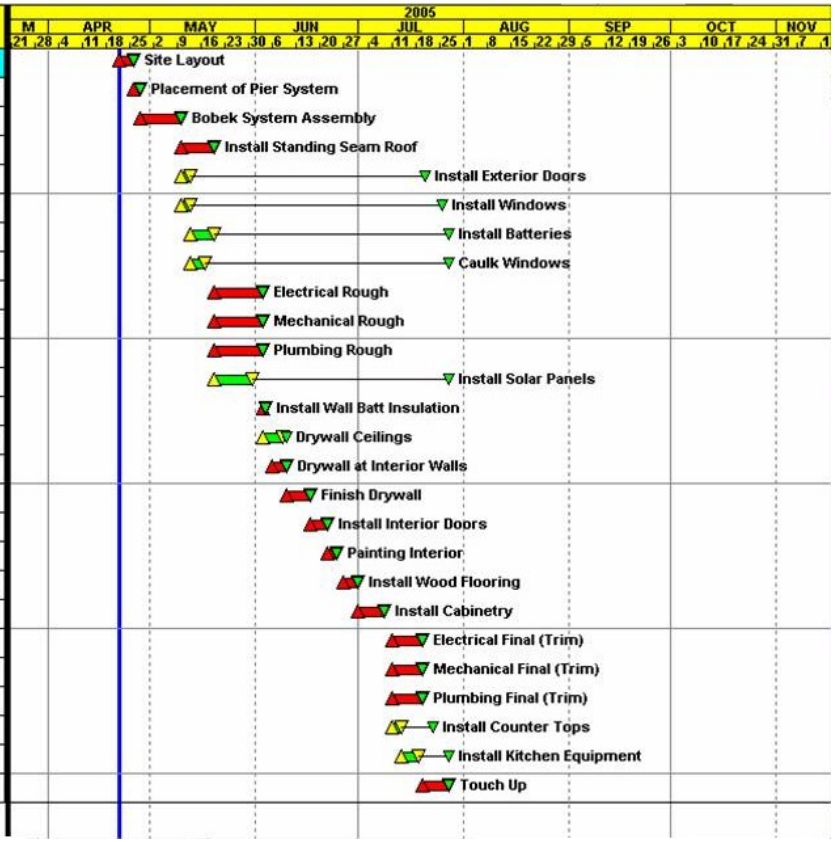
Can give contractor option of flush-out or testing.

Punch-out and cleaning must be complete before starting flush-out. Can be commissioning if it does not introduce contaminants.

Construction IAQ Mgt Before Occupancy Credit (flush-out or IAQ testing)

- Need to accommodate in project schedule

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish
010	Site Layout	2	22APR05	25APR05
020	Placement of Pier System	2	26APR05	27APR05
030	Bobek System Assembly	8	28APR05	09MAY05
070	Install Standing Seam Roof	8	10MAY05	19MAY05
050	Install Exterior Doors	3	10MAY05	12MAY05
040	Install Windows	3	10MAY05	12MAY05
085	Install Batteries	5	13MAY05	19MAY05
060	Caulk Windows	2	13MAY05	16MAY05
090	Electrical Rough	10	20MAY05	02JUN05
100	Mechanical Rough	10	20MAY05	02JUN05
110	Plumbing Rough	10	20MAY05	02JUN05
080	Install Solar Panels	7	20MAY05	30MAY05
125	Install Wall Batt Insulation	1	03JUN05	03JUN05
120	Drywall Ceilings	4	03JUN05	08JUN05
130	Drywall at Interior Walls	4	06JUN05	09JUN05
140	Finish Drywall	5	10JUN05	16JUN05
150	Install Interior Doors	3	17JUN05	21JUN05
160	Painting Interior	3	22JUN05	24JUN05
170	Install Wood Flooring	4	27JUN05	30JUN05
180	Install Cabinetry	6	01JUL05	08JUL05
210	Electrical Final (Trim)	7	11JUL05	19JUL05
220	Mechanical Final (Trim)	7	11JUL05	19JUL05
230	Plumbing Final (Trim)	7	11JUL05	19JUL05
190	Install Counter Tops	3	11JUL05	13JUL05
200	Install Kitchen Equipment	3	14JUL05	18JUL05
240	Touch Up	6	20JUL05	27JUL05



EQ Low-Emitting Materials Credits

Intent:

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Requirement:

Adhesives and Sealants Credit

Paints & Coatings Credit

Carpet Credit (with alternative for hard flooring)

Composite Wood & Agrifiber Credit

Notes:

VOC content except urea formaldehyde for composite wood

Most are Field-applied only.

VOC budget Alternate Compliance Path available (individual noncompliant products with overall low VOC performance).

Indoor Environmental Quality (EQ) Low-Emitting Materials Credits

Low-emitting materials credits include everything inside the exterior surface covering, including wall cavities, attics, above ceilings, ductwork. See LEED Reference Guide Supplemental Information section on these credits.

Low Emitting Materials Credits

- Take a picture of label
- Compare to requirement (LEED Reference Guide)

ACRYLPRO
CERAMIC TILE ADHESIVE
Adhesivo para Azulejos y Baldosas de Cerámica
For wall and floor tile installations
Para instalaciones de baldosas y azulejos en pisos y paredes
Just spread and set
Sets porcelain, ceramic, marble and stone tile

Low VOC Adhesives

VOC Limit*, Less Water and Less Exempt Compounds in Grams per Liter

Architectural Applications	Current VOC Limit
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesive	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50

Adhesives And Sealers

Zoom Out

V-11 Adhesive
Vinyl Composition Tile (VCT) & Premium Visual Tile (PVT) Adhesive
VCT: Essentials™ / Designer Essentials® / PVT: Inspirations™ / Brushwork™
Brushwork™ Brights / ColorPoint™ / SolidPoint™ / SafeWalks™

DESCRIPTION

V-11 is a solvent-free premium latex adhesive developed specifically for installing Mannington Commercial Vinyl Composition Tile. V-11 is nonflammable and provides a strong moisture-resistant and alkali-resistant bond. You may use it on all approved wood underlayments and on, above, or below-grade concrete substrates. Refer to Mannington Professional Installation Guide.

FEATURES

- Easy application
- VOC-compliant / solvent-free / low odor
- Non-flammable
- Moisture- and alkali-resistant
- Readily identifiable mylar chips
- Contains fungicide protection
- Complies with SCAQMD Rule 1168

Education is Critical

- Government field team needs to know what to look for
- Contractor and subcontractor teams need to know what to do

LEED Accredited Professional

Demonstrated knowledge through testing

Correct interpretation of credits

At least one LEED AP in each district

Contractor has to have one

You need one too

SAS GOAL: At least ONE LEED AP at each Resident/Project Office

Questions, Feedback

- Requirements Review
- Submittals
- Preconstruction
- During Construction
- Closeout
- Multiple Contractor Combined Projects
- LEED Construction Credits
- LEED AP

That's It!

- **Thank you** for your time and attention
- To receive continuing education certificate YOU MUST SIGN SEPARATE ATTENDANCE SHEET AT CLOSE OF WORKSHOP
- Your certificate will be emailed to you within a week or two of the class
- Please turn in comment and suggestion forms if you have any
- Feel free to contact your instructor if you have additional comments/questions afterward